The Citrus Industry

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The Season In Review

For the Florida citrus grower in general, the 1942-43 shipping season now drawing to its close, has been a far more satisfactory season than most growers anticipated prior to the beginning of picking and packing last fall.

Labor shortage, congested transportation facilities, price ceilings and other impediments due to the war, gave many a grower the jitters in contemplation. As frequently happens, the situation was much worse in contemplation than it proved to be in operation. The situation, vexing as it was in prospect, turned out to be quite satisfactory as the season progressed.

True, there was a scarcity of experienced pickers, but pickers were found and the crop was harvested. Probably the work was not as well done as in some former seasons; certainly the cost of picking was greater — but the crop was picked.

Packers, too, felt the shortage of labor, even more probably than in case of pickers. But here, too, the lack of labor was less acute than had been anticipated. Due to inexperienced help, the packing may not in all cases have been fully up to standard — but the crop was packed.

Transportation, while congested, was in most cases adequate for the movement of the crop with much less delay than had been anticipated. The combined efforts of the railroads, truck lines, the federal government and the shippers minimized the congestion and made possible the handling of a great crop of fruit without undue hardship to the shippers.

Prices were better than had been anticipated early in the season. The seller of any commodity is never quite satisfied with the prices received. He feels that he is justly entitled to a little more than he receives. The fact remains, however, that growers as a rule received much better prices than they hoped for when price ceilings and other restrictions were first announced. Purchases by the government for the armed forces and for fulfillment of the lend-lease program, greater purchasing power of the consuming public, activity of organizations featuring the health and food value of citrus fruits all stimulated a demand for a greatly increased volume of fresh citrus fruits.

Due to the vigilance of state and federal agencies, there was little complaint of the acceptability of the fruit shipped. The crop as a whole was above average in quality and this played an important part in maintaining prices.

Canning and dehydration plants took an unusually high percentage of the crop, while much of the fruit which hitherto has been considered and treated as waste, was utilized as by-products for feed and fertilizer purposes, and new use for former waste are constantly being discovered by research workers of the industry.

By and large, the shipping season of 1942-43 has been more satisfactory than the most optimistic grower or shipper believed possible. What the future seasons may be, no one can tell, but we have learned some lessons from our wartime experience which should be continued for the duration — and kept in practice when peace comes.

Horticultural Society Meets

As this is written, the Fifty-Sixth Annual Meeting of the Florida State Horticultural Society is in session at Winter Haven.

For this important wartime meeting a program of exceptional interest and importance has been arranged. Well known speakers of state, national and international reputation are giving the growers of Florida the benefit of their experience, their research and their observations. The papers presented are of vital importance to Florida citrus growers and other horticulturists of the state.

The Citrus Industry hopes in future issues to present many of these papers to its readers for their information and guidance in matters now being so ably discussed in the meeting in progress at Winter Haven.

As a part of his wartime effort, every grower should plan now to produce next abundant a crop as possible — and he s also to make that crop of the highest q ity.

Just as your horse needs feed tion from the elements, your gr ter and protection from mite

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Any grove that is wo ing for after planting.

CITRUS TREES UNDER WAR CONDITIONS

CONFORMING

As everyone engaged in Agriculture at the present time knows, the labor situation makes it very difficult to keep up normal production. Citrus Fruits and Citrus Trees are on the Essential List. We are increasing our fruit production, but the supply of trees is going to be very limited for the duration, and the stock-list as to varieties and sizes is going to remain incomplete, but we are going to do the best we can.

VARIETIES WE GROW

ORANGES

Parson Brown
Hamlin
Jaffa
Homosassa
Queen
Pineapple
Valencia
Lue Gim Gong

GRAPEFRUIT

Excelsior
Duncan
Marsh Seedless
Foster Pink
Thompson Pink

FANCY FRUITS

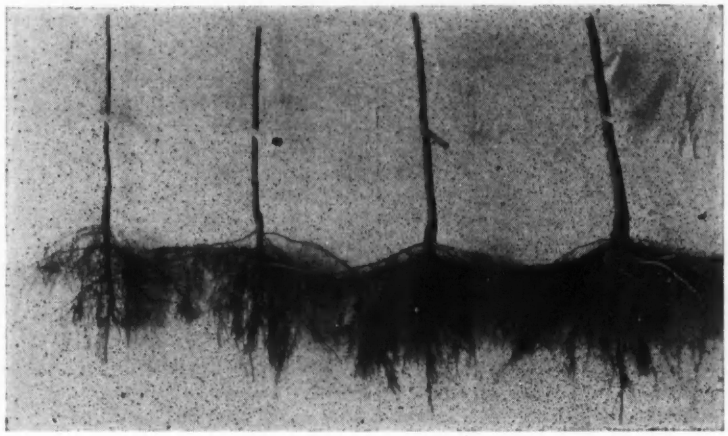
Temple
King
Dancy Tangerine
Lake Tangelo
Minneola Tangelo
Seminole Tangelo
Thornton Tangelo
Tahiti Lime
Meyer Lemon
Villa Franca Lemon
Calamondin
Nagami Kumquat

PRICES

April 15, 1943

Subject to Change Without Notice

Notwithstanding the fact that the cost of Labor, which is the largest item in the production of Citrus Nursery Stock, has more than doubled in the last two years, our tree prices are far below what they were in 1920-1923.



½" 60c ⅝" 70c ¾" 80c 1" 90c

Above prices are for Grove Planting quantities, or for orders totaling 100 or more trees. For small quantities add 10c a tree. Oversize trees, when available, at slightly higher prices. Orders for 1000 or more trees will be delivered via truck a reasonable distance, subject to Government regulations as to use of trucks. Otherwise F. O. B. Bartow.

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Trees may be reserved by the payment of 25 percent with order, balance to be paid at time of shipment, unless otherwise arranged at time order is placed.

NO LITERATURE

We do not issue a catalog; the supply of our book, PRACTICAL CITRUS CULTURE, is exhausted and we will probably not have more printed for some time. LAKE GARFIELD TREES have been planted for nearly thirty years all over the Citrus Belt of Florida, Texas and Louisiana, and in several foreign countries. They are well known for their superior quality. We invite all prospective planters to come to Bartow and see the trees in the nurseries, as well as our large acreage of splendid bearing groves.

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"BUDWOOD SELECTION AND QUALITY" — IS OUR MOTTO

Experiments In The Control Of Citrus Rust Mite

BY MAX R. OSBURN AND HERBERT SPENCER 1/

U. S. Dept. of Agr., Agricultural Research Administration, Bureau of Entomology & Plant Quarantine

Introduction

In the Southeastern States the citrus rust mite (**Phyllocoptes oleivorus** Ashm.) is one of the most important pests of citrus fruits, which are playing an important part in the maintenance of a well-balanced diet during the national emergency. The rust mite is distributed throughout the citrus producing area and attacks all portions of the tree except the older limbs and branches, but the injury resulting from its feeding on the fruits is by far the most important. Fruits infested by large numbers of the mites soon lose their normal coloration for one of a characteristic brownish-black russeted appearance, and severely russeted fruits are smaller, lighter in weight, and contain less juice than normal ones. Ordinarily the injury reduces the grade of the fruits, and this results in reduced prices to the growers.

Ever since Hubbard (2)2/, in 1885, suggested the use of flowers of sulfur for rust mite control, sprays and dusts containing some form of sulfur have been used to protect citrus trees and fruits from injury by this pest. In 1930 Yothers and Mason (4) reported that sprays containing lime-sulfur solution, dry-lime sulfur, soda, sulfur, liver of sulfur, and barium tetrasulphide were effective against rust mites, and that sprays and dusts, when compared on the basis of sulfur content, seemed to be about equally effective. In 1934 Yothers, Miller, Watson, and Thompson (7) recommended three applications of lime-sulfur solution at approximately 3-month intervals during a season for the control of rust mites, and in 1935 Yothers and Miller (6) found that blood albumin and glue were effective stickers for sulfur dust.

Although ordinarily the immediate reduction in the number of rust mites following a sulfur application is satisfactory, the ability of these mites to develop rapidly, the frequent heavy rains that wash sulfur from the trees, and the long growing seasons of some varieties of citrus fruits make it imperative to apply control measures several times during the season. In an effort to increase the protective periods of sulfur applications, field experiments were conducted at the Orlando, Fla., laboratory during the period 1935 to 1938, inclusive, and at the St. Lucie, Fla., laboratory from 1939 to 1940, inclusive, to investigate the effectiveness and persistence of sulfurs of different particle size in sprays containing various supplements, or in dusts.

Materials

Sulfurs. — The lime-sulfur solution and the dry lime-sulfur were standard commercial products. One of the wettable sulfurs was a 325-mesh commercial product containing 90 percent of sulfur and 10 percent of inert ingredients (conditioner and wetting agent), and the other was 4,000-mesh, containing 99.5 percent of sulfur and 0.5 percent of a wetting agent, processed according to specifications. The 325-mesh dusting sulfur was a commercial product consisting of 93 percent of sulfur and 7 percent of a conditioner, while the 2,000-mesh dusting sulfur, processed according to specifications, contained 98.5 percent of sulfur and 1.5 percent of a conditioner.

Other Materials. — In addition to the sulfurs listed above, sprays containing phenothiazine plus calcium caseinate, phenothiazine plus calcium caseinate and fish oil, and derris plus fish oil were tested. Each of these spray mixtures was applied several times to trees heavily infested with mites, but they failed to decrease the infestation for any length of time, as compared with the results from sulfur applications made under similar conditions.

Supplements. — In the course of the work, many materials were added to sulfur sprays for the purpose of lengthening the period of protection against reinfestation by the mites. All the supplements, with the exception of rosin-residue emulsion, were obtained commercially. The rosin-residue emulsion was made in the laboratory according to the method given in 1936 by Goodhue and Fleming (1). In preparing mixtures for spraying, the supplements were added to the spray tank immediately after the sulfur had been mixed and diluted.

Methods

Groves Used. — In 1935-38, inclusive, the experimental groves were located in Orange County, Fla. Groves A and C, used in 1935 and 1936, respectively, consisted of trees of the variety Parson Brown that were 10 years old in 1935. Grove B used in 1935, Groves D and E used in 1936, Groves F and G used in 1937, and Grove H used in 1938, all consisted of Valencia trees that were 10 years old in 1935. Groves I and J, used in 1939 and 1940, respectively, were located in St. Lucie County, Fla., and consisted of Valencia trees that were 13 years old in 1939.

Plot Arrangement. — The treatments were arranged in rows in 1935; in 1936, 1937, and 1938 each spray treatment was applied to groups of 2 or 3 trees and was replicated four times throughout the experimental plot. The randomized-block arrangement was used in 1939 and 1940 for all spray treatments. Plots of trees receiving sulfur dust were arranged in rows throughout the experimental work, because of the impracticability of dusting individual trees in randomized blocks and because of the influence of drifting sulfur on surrounding trees treated with other combinations. Each spray and dust treatment involved at least 8 trees. In every experimental arrangement except three, untreated trees were available for comparison with the treated trees.

Applications. — All sprays were applied with a power sprayer operated at 400 pounds' pressure, a single gun with a 7/64-inch opening in

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1/ Acknowledgements are due the following: The Dr. P. Phillips Co. and the Orange County (Florida) Commissioners, of Orlando, Fla., and C. M. Stecher, of Fort Pierce, Fla., for the use of orange groves during investigations; and to John A. Fluno and Willis Mathis for assisting in making treatment applications and infestation counts.

2/ Numbers in parentheses refer to Literature Cited at the end of this article.

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56th Annual Meeting Florida State Horticultural Society One Of Best Ever Held....

BY S. LLOYD FRISBIE

The Fifty-Sixth annual meeting of the Florida State Horticultural Society which closed its session in Winter Haven on Thursday, May 27, was unusually well attended in view of the present conditions.

The meeting, the second to be held since the entry of the United States into the second World War, was built around problems which have largely come about as the result of the war, with particular emphasis being given to the requirements of crops, the treatment of trees and crops under war-time circumstances and the customary recital of the findings of experts in research upon various factors influencing the production and quality of citrus and vegetable crops.

Dr. A. F. Camp, director of the citrus experiment station at Lake Alfred, as always was the biggest drawing card of the meeting, while many men prominent in various governmental positions having to do with the horticultural operations of the nation during war time brought much of interest to the members of the Society.

To attempt even to summarize the many fine talks and excellent papers which were delivered at the meeting would be too much of a job for this writer to attempt to boil down into one issue of this publication, but as in years past we hope to reproduce many of the interesting talks that were given at this meeting from time to time and we feel that this year's presentations will be of unusual interest.

The Thursday program was devoted to the various phases of governmental agency contact with agriculture in the state and was under the direction of L. H. Kramer, chairman of the division of agriculture in the State Defense Council.

Speakers from various agencies in Washington and those authorities in the state who have undertaken various important state work in conjunction with the government program gave their auditors a vast amount of information concerning the numerous things which have been done and the work which lies ahead also outlining some of the difficulties which will have to be surmounted in order that Florida's part in the production of food for the world may measure up to the quota which has been alloted to it.

Convention Notes

Always a meeting in which the discussion and consideration of problems affecting the agriculture of the state has been a dominant factor, we noted an unusual degree of seriousness in the undertone of the 1943 meeting.

The full measure of the seriousness of those present was well indicated by the reaction to Francis Flood's talk in which he told of the all out effort of the British farmers in this war, in which they gave virtually all their time and their incomes under the most adverse circumstances to boost their normal production by 73 percent since the war started, despite bombing, labor shortages, machinery shortages and all the other handicaps which confront them. Many of those present indicated their willingness to go the full way to make America's pro rata production match that of the British

We were disappointed in not seeing some of the old timers at this meeting whom we have met year in and year out for a long succession of Horticultural Society meetings.

On the other hand Dr. David Fairchild and Mr. H. G. Hastings without whom now such meeting would hardly be complete were present looking as hale and hearty as they did ten years ago.

Frank M. O'Byrne, president of

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EXPERIMENTS IN THE CONTROL OF CITRUS RUST MITE

(Continued from page 3)

the disk being used. The dust applications were made with a power outfit mounted on a light truck chassis equipped with a rear platform for the manual operation of the delivery outlet. Dusts were applied in the morning about sunup, when air currents are usually at a minimum and when heavy dews are ordinarily present on fruits and foliage.

The initial applications in all the groves except H and I were made in April or May. Suitable infestations of rust mites did not appear until June in Grove H and the initial applications were delayed until then; in Grove I the season's work did not start until September, because transfer of the laboratory, from Orange County to St. Lucie County made it necessary to establish experimental plots in the new location. However, the fruit in Grove I had been protected by the owner from rust mite injury until taken over for experimental purposes. The delay in making the initial applications in Groves H and I shortened the usual season for protection, and this is reflected in the reduced numbers of applications in these groves.

In general, mite infestations were not so heavy in Groves C, H, I, and J, throughout the season as they were in the remaining groves. This is shown by the smaller number of applications required for protection.

Evaluation of Treatments. — The citrus rust mite is small, and individuals cannot be seen without the aid of a magnifying lens. A linen tester having a field ½ inch by ½ inch was used in determining infestations. Observations were made by placing this field on the top surfaces of 3 leaves, on the lower surfaces of 3 different leaves, and on the surfaces of 3 fruits on each tree. The 9 "squares" so examined were recorded as infested or uninfested, without regard to the number of individual mites present, following a method developed by Yothers and Miller (5). Infestation data were based on the percentage of squares infested, calculated from a total of 9 squares from each of 8 trees, or 72 squares from each treatment.

The first application of all treatments in each grove were made within the same period (1 or 2 days). In most cases this was in the spring, when mites became abundant but before injury to fruit took place. Additional applications of the same material were made to the same trees throughout the season whenever the preceding treatment lost its effectiveness, and it was the practice to consider a treatment effective until examinations showed a mite infestation of at least 30 percent 3/.

Examinations in the case of each treatment were made at approximately 2-week intervals from the first application until harvest. When an infestation approaching 30 percent was found during a regular examination, another examination was made a week later to prevent an infestation of 30 percent or more from being present for any length of time before the treatment was reapplied.

A standard control treatment consisting of a lime-sulfur spray was included in each experimental setup, for comparison with the experimental treatments. Comparison of the efficiency of the various treatments in controlling rust mites was based chiefly on the length of the periods of protection afforded against reinfestation and on the number of applications necessary per season rather than on mortality of the mites.

At harvesttime the fruit from trees receiving each treatment and from the check trees in Groves A, B, C, D, and F was weighed and the average yield per tree was computed. In all groves except J, samples of fruit from trees receiving each treatment and from untreated check trees were examined for rust mite injury as determined by the characteristic russeting. All fruits showing any sign of this injury were classed with those severely russeted.

Injury. — Sometimes when sulfur applications are made during periods of intensive sunlight and high temperatures (90° F. or above), or when these conditions immediately follow an application, severe fruit burn may occur. The fruits on run-down trees with sparse foliage are more susceptible to sulfur burn than are those on healthy trees; also early ripening varieties of orange, such as the Parson Brown, are more easily injured than the late-maturing Valencia. This injury usually appears on the fruit skin at a point in direct line with the most intensive sun rays and develops into sunken, circular, corky area, which increases insize as the fruit grows. Observations regarding any injurious effects the spray or dust treatments might have caused to the fruit skins were made on the same fruits and at the same time as the examinations for injury caused by the rust mite. Injury similar in appearance to that caused by sulfur burn and not readily distinguishable from it is sometimes caused by the sun's rays. In evaluating the effects of the treatments discussed in this paper, such sunburn was, of necessity, included in the percentage of fruit burned.

Cost of Treatments. — Spray or dust treatments which protect against rust mite infestation for the longest periods and require the fewest applications are not always the least expensive. The cost is affected by the price of the insecticides that make up the treatment, the method of application, equipment, depreciation and labor costs, the amount of material applied, and the number of applications per season. During the course of this work, records were kept so that the costs of the various treatments could be compared.

After investigating the cost to commercial growers, a flat rate of 1 cent per gallon of material was decided on as the approximate cost for making a spray application and 0.5 cent per trees for a dust application. The cost of a dust application was based on a per-tree unit rather than on the quantity of material applied because large quantities of dust can be applied with very little more labor or time than small quantities, but the application of large amounts of spray material ordinarily requires more time and labor than the application of smaller amounts. These application costs include labor and depreciation of spraying and dusting equipment and are used uniformly in the calculations to give a fair comparison of the cost of the materials used and of the spray program followed.

The cost of each of the spray and dust materials and supplements used in these experiments is listed below:

Lime-sulfur (32°B.) $0.14 per gal.;Wettable sulfur, 325-mesh, 90% pure sulfur, $.035 per lb.; Wettable sulfur, 4,000-mesh, 99.5% pure sulfur, $.06 per lb.; Dry lime-sulfur, $.095 per lb.; Dusting sulfur, 325-mesh, 93% pure sulfur, $.02 per lb; Dusting sulfur, 2,000-mesh, 98.5% pure sulfur, $.047 per lb.; Rosin-

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3/. Yothers and Miller (5) determined that a 50 percent infestation was the danger point, so a 30 percent infestation was decided on as a basis for the experimental work.

residue emulsion, $.02 per lb.; Fish oil, $.90 per gal.; Cottonseed oil (crude), $.80 per gal.; Linseed oil (raw), $1.10 per gal.; Corn oil (crude), $.80 per gal.; Potash fish-oil soap, $.083 per lb.; Soybean flour, $.057 per lb.; Sodium Lauryl sulfate, $.30 per lb.; Alkylated sulfonated diphenyl, $.58 per lb.

The costs of the various spray and dust programs were calculated from the prices of the insecticides used, the estimated costs of application, the average amount of material applied to each tree per application, and the number of applications per crop.

Results

The formulas for all treatments used in these tests are given in Table 1. Data on the number of applications required, the average yield of fruit per tree, the percentages of fruit injury caused by rust mites and by the treatment used, the amount of material used per tree for each application, and the total cost per tree are given in table 2, insofar as records are available for each treatment in each grove.

Table 1. — Formulas for treatments used in experimental control of the citrus rust mite on oranges

Treatment symbol	Materials	Quan. per 100 gals.	Supplement	Quan. per 100 gals.
	Sprays			
1	Lime-sulfur	2 gal.	None	
2	Lime-sulfur	2 gal.	None	
	Wettable sulfur (325-mesh)	10 lb.		
3	Lime-sulfur	2 gal.	None	
	Wettable sulfur (325-mesh)	5 lb.		
4	Lime-sulfur	2 gal.	None	
	Wettable sulfur (4,000-mesh)	5 lb.		
5	Lime-sulfur	2 gal.	Hydrated lime	6 lb.
			Aluminum sulfate	6 lb.
6	Lime-sulfur	2 gal.	Hydrated lime	3 lb.
			Aluminum sulfate	3 lb.
7	Lime-sulfur	2 gal,	Rosin-residue emulsion	3 lb.
8	Lime-sulfur	2 gal.	Potash fish-oil soap	1 lb.
9	Lime-sulfur	1.6 gal.	None	
10	Lime-sulfur	1.6 gal.	None	
	Wettable sulfur (325-mesh)	10 lb.		
11	Lime-sulfur	1.6 gal.	None	
	Wettable sulfur (4,000-mesh)	5 lb.		
12	Lime-sulfur	1.6 gal.	Sodium lauryl sulfate	½ oz.
13	Lime-sulfur	1.6 gal.	Alkylated sulfonated diphenyl	½ oz.
14	Lime-sulfur	1 gal.	None	
	Wettable sulfur (325-mesh)	10 lb.		
15	Lime-sulfur	1 gal.	None	
	Wettable sulfur (325-mesh)	5 lb		
16	Wettable sulfur (325-mesh)	10 lb.	None	
17	Wettable sulfur (325-mesh)	10 lb.	Hydrated lime	6 lb.
			Aluminum sulfate	6 lb.
18	Wettable sulfur (325-mesh)	10 lb.	Hydrated lime	3 lb.
			Aluminum sulfate	3 lb.
19	Wettable sulfur (325-mesh)	10 lb.	Rosin-residue emulsion	6 lb.
20	Wettable sulfur (325-mesh)	10 lb.	Rosin-residue emulsion	3 lb.
21	Wettable sulfur (325-mesh)	10 lb.	Fish oil	1½ pt.
22	Wettable sulfur (325-mesh)	5 lb.	Fish oil	1½ pt.
23	Wettable sulfur (325-mesh)	5 lb.	Hydrated lime	3 lb.
			Aluminum sulfate	3 lb.
24	Wettable sulfur (325-mesh)	5 lb.	Bicarbonate of soda	2 lb.
			Aluminum sulfate	3 lb.
25	Wettable sulfur (4,000-mesh)	10 lb.	None	
26	Wettable sulfur (4,000-mesh)	5 lb.	None	
27	Wettable sulfur (4,000-mesh)	5 lb.	Hydrated lime	2 lb.
			Aluminum sulfate	3 lb.
28	Wettable sulfur (4,000-mesh)	5 lb.	Bicarbonate of soda	2 lb.
			Aluminum sulfate	3 lb.
29	Wettable sulfur (4,000-mesh)	5 lb.	Rosin-residue emulsion	1 lb.
30	Wettable sulfur (4,000-mesh)	5 lb.	Fish oil	1½ pt.
31	Wettable sulfur (4,000-mesh)	5 lb.	Fish oil	1 pt.
32	Wettable sulfur (4,000-mesh)	5 lb.	Cottonseed oil	1½ pt.
33	Wettable sulfur (4,000-mesh)	5 lb.	Cottonseed oil	1 pt.
34	Wettable sulfur (4,000-mesh)	5 lb.	Linseed oil	1½ pt.
35	Wettable sulfur (4,000-mesh)	5 lb.	Corn oil	1½ pt.
36	Wettable sulfur (4,000-mesh)	5 lb.	Potash fish-oil soap	1 lb.
37	Wettable sulfur (4,000-mesh)	5 lb.	Soybean flour	1 lb.
38	Dry lime-sulfur	5 lb.	None	
39	Dry lime-sulfur	8 lb.	None	
	Wettable sulfur (325-mesh)	5 lb.		
40	Dry lime-sulfur	5 lb.	None	
	Wettable sulfur (325-mesh)	5 lb.		
	Dusts			
41	Sulfur (325-mesh)		None	
42	Sulfur (2,000-mesh)		None	

Discussion. — Treatment 1, a standard spray for rust mite control consisting of 2 gallons of lime-sulfur per 100 gallons of water, was used as the standard in all groves except I. From 3 to 5 applications of this material were required and in every grove except G it proved to be less efficient in regard to number of applications required than one or more of the other materials tested. In all groves for which records are available, a comparatively high average yield of fruit per tree resulted from the use of this treatment. It kept the fruit satisfactorily free of rust mite injury in all groves but D, and caused no appreciable amount of sulfur burn, except in Grove A. An unusually high amount of sulfur burn resulted from all treatments applied in that grove in 1935, because the trees — Parson Brown variety — were not in good physical condition. The amount of injury attributed to sunburn on the untreated fruit in that grove averaged 3 percent, which was considerably higher than that recorded for untreated trees from any other grove. That conditions were unusual in Grove A in 1935 is also brought out by the fact that very little injury was recorded from similar treatments applied in 1936 in Grove C, of the same variety. Treatment 1 was the most inexpensive treatment in Grove G, but in the other groves for which figures are available its cost was as high as, or higher than, that of more efficient treatments.

Lime-sulfur, 2 gallons, with 10 pounds of 325-mesh wettable sulfur per 100 gallons of water, Treatment 2, was tried in all groves but H and I. It proved to be one of the best materials tested and only two to four applications were required. It was as efficient as any of the treatments used in comparsion with it in each grove with regard to the number of applications required for protection against rust mite infestation and in all groves except G required one less application than Treatment 1. In all groves for which records are available, a satisfactorily high yield of fruit was obtained from trees that received this treatment. It reduced rust mite injury to a sufficiently low level, and, except under the apparently unusual conditions that existed in Grove A, caused a decidedly insignificant amount of sulfur burn.

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Old Timer Reminisces....

BY THE CITRUS INDUSTRY OBSERVER

When it came to our attention at the Horticultural Society meeting in Winter Haven that Col. Bayard F. Floyd was just completing his twenty-seventh consecutive year as secretary of the Society we started casting about to see who had preceded him and while we did not delve deep enough to list all of the secretaries we were fortunate enough to find H. G. Hastings, of Atlanta, in the hotel lobby who told us many interesting things concerning the early history of the organization.

Among other things we learned from Mr. Hastings was the peculiar reason he gave for the formation of the Society. He stated the American Pomological Society wanted to meet in Florida and that there was no organization to act as host to them.

Hasting's father owned a hotel at Interlachen and invited the national society to meet there, with the Florida State Horticultural Society which he stated was organized under its first president Dudley W. Adams, as their hosts. From that beginning the Society has come on down through the years growing in strength and health as the years have passed and serving the horticultural interests of the state in a manner which has been highly satisfactory throughout the years.

Hastings admitted to having been secretary of the Society from 1896 to 1899 and reported that he had succeeded Arthur Manville. He expressed the belief that due to Floyd's long tenure of office he was the only living ex-secretary of the organization.

Frank J. Stirling had a copy of the 1892 proceedings, Hasting stated which he thought was the beginning of the publications.

Speaking of the first president, Adams, Hastings said that Adams had at one time been a member of the Iowa legislature and initiated legislation which resulted in the ultimate setting up of the interstate commerce commission. Adams served as president 12 years and was succeeded by George Tabor of Glen St. Mary.

Hastings told of the beginning of his present nationwide seed business which was started at Interlachen and later moved to Atlanta, where the company's present headquarters remain.

Asked as to the effect of the Victory gardens on the seed business Hastings reported that it had virtually swamped every seed company in the nation. He said that the government had asked for 18 million Victory gardens and that last reports indicated that more than 21 million had been planted.

Hastings expressed his surprise at the intelligent manner in which these gardeners ordered the proper seeds, saying that as a whole their seed orders indicated that purchasers had studied their planting problems before ordering their seeds.

Asked if the town of Hastings was named for him or his family Hastings reported that this was not the case, that it was named for another man of the same name but no relation. He mentioned incidentally that he remembered when the total potato plantings around that now nationally known potato center totalled only one-half acre.

Hastings stated that he thought the Proceedings of the Society presented a graphic history of the citrus industry of the state and recalled the hectic periods which the industry had gone through when the freezes of the 90's virtually wiped the industry out of business.

He stated that while he had lived in Atlanta for many years that he felt a vital interest in the Society and rarely missed a meeting.

56TH ANNUAL MEETING HORTICULTURAL SOCIETY ONE OF BEST EVER HELD

(Continued from Page 5)

the Society, did a splendid job of handling the meetings, while the presence of Col. Bayard F. Floyd serving his 27th consecutive year as secretary of the Society gave everyone assurance that the affairs were in good order.

Dean H. Harold Hume demonstrated his versatility and his capability Wendesday night when he took charge of the task of raising sufficient pledges among those present to assure the maintenance of the Society for another two years, and the publication of the annual proceedings for both years even though 1944 might find it impossible to hold a meeting.

There are many others who took

(Continued on next page)

Horticultural Society Officers Re-Elected

Upon recommendation of the nominating committee all officers of the Florida State Horticultural Society were re-elected to serve for the coming year. They were:

Frank M. O'Byrne, Lake Wales, President.

Earl W. Hartt, Avon Park, Vice-President.

Frank Stirling, Ft. Lauderdale, Vice-President.

W. F. Ward, Brooksville, Vice-President.

Dr. David Fairchild, Coconut Grove, Honorary Vice-President.

Dr. H. S. Wolfe, Homestead, Krome Memorial Institute, Vice-President.

R. A. Carlton, West Palm Beach, Vegetable Section, Vice-President.

Col. Bayard F. Floyd, Davenport, Secretary.

Ralph P. Thompson, Winter Haven, Assistant Secretary.

Frank L. Holland, Winter Haven, Treasurer.

J. Frank Alexander, Bartow, Sergeant at Arms.

The following were re-elected as the executive committee for the coming year:

R. S. Edsall, Wabasso; C. D. Kime, MacClenney; Lem P. Woods, Jr., Tampa; Floyd L. Wray, Hollywood, and Dale Talbert, Vero Beach.

58TH ANNUAL MEETING MORTICULTURAL SOCIETY ONE OF BEST EVER HELD

(Continued from preceding page)

part in the meeting that should be mentioned and others whose presence served as a warranty that the Society remains after fifty years still on a sound footing, but without mentioning them we would say that the meeting was judged from every standard one of the most important in the history of the Society.

It is expected that the supply of insecticides and fungicides will be sufficient to take care of commercial crops and victory gardens this year, says the Florida Experiment Station.

County farm rationing committees can asisst farm families in applying for and obtaining permission to purchase a pressure cooker.

In Our March Towards Victory Nothing Must Be Neglected To

In Growing Florida Fruits and Vegetables, Too, Nothing Must Be Neglected.

Superior's Extra Value Fertilizers Help Produce Those Extra Value Crops . . .

Not only are Superior's Extra Value Fertilizers notable because of the fact that they are compounded to care for the needs of Florida Growers and Florida Crops, by men who are recognized as authorities in their line . . . but for the reason that they contain All Ten Of The Vital Elements known to be of exceptional value in providing trees and plants with that extra something which goes to building sturdy plants and high grade crops.

When Victory is won we will welcome the opportunity to broaden the scope of our activities . . . in the meantime we are taking care of the requirements of our regular customers.

Remember That Superior's Extra Value Brands Contain All Ten Vital Elements.

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Factory and Office East Broadway A

Citrus Ranks High In Nutritional Value

Growers of citrus fruits will be interested to know that the United States Department of Agriculture has given oranges and grapefruit a high place in the war time nutritional diet program. Daily use of oranges and grapefruit is urged as an important factor in the wartime diet under rapidly changing food conditions. This official recognition of the importance of citrus fruits in the daily diet should prove a strong incentive to increased consumption on the part of the civilian population. The federal government is backing up its advice to civilians by providing citrus fruits and citrus juices to the men in the armed forces, both at home and abroad.

As the start of a nationwide program to improve wartime diets and maintain nutrition standards in the face of changing food conditions, the U. S. Department of Agriculture has listed seven basic food groups which should be included in the daily diet of everyone.

Based on the long experience of the Bureau of Human Nutrition and Home Economics, state and local nutrition committees and the country's food industry, the seven groups of food are as follows:

Nutrition Grop One — GREEN AND YELLOW VEGETABLES, some raw—some cooked, frozen or canned.

Nutrition Group Two—ORANGES, TOMATOES, GRAPEFRUIT, or raw cabbages or salad greens.

Nutrition Group Three—POTATOES AND OTHER VEGETABLES AND FRUITS, raw, dried, cooked, frozen or canned.

Nutrition Group Four — MILK AND MILK PRODUCTS, fluid, evaporated, dried milk or cheese.

Nutrition Group Five — MEAT, POULTRY, FISH OR EGGS, or dried beans, peas, nuts or peanut butter.

Nutrition Group Six — BREAD, FLOUR AND CEREALS, natural whole grain, or enriched or restored.

Nutrition Group Seven — BUTTER OR FORTIFIED MARGARINE (Vitamin A added).

To emphasize the importance of daily eating of these seven food groups and to illustrate to homemakers ways of preparing them so that the most food value will be retained, Wartime Food Demonstrations will be held all over the country under the auspices of local Defense Councils. By this means it is hoped to introduce new foods into regional and racial diets, to check food waste and to make the best possible use of the various foods available, as well as maintaining the nutrition standards of the nation.

Soon available for public distribution will be a color poster illustrating the seven food groups and emphasizing the program slogan "U. S. NEEDS US STRONG—EAT THE BASIC 7 EVERY DAY."

Conservation farming helps increase yields, as well as saving and improving the land for the future.

EXPERIMENTS IN THE CONTROL OF CITRUS RUST MITE

(Continued from page 7)

When either the lime-sulfur of the wettable sulfur content in this mixture was reduced (Treatments 3, 14, and 15 in Grove E, 15 in Grove G, and 10 in Grove I) no increase in the number of applications was necessary and there was some indication of reduction in cost.

In Grove H the 4,000-mesh wettable sulfur in combination with lime-sulfur (Treatment 4) required one less application than the same amount of the 325-mesh material (Treatment 3), and the cost was somewhat reduced. The addition of 5 pounds of the 4,000-mesh wettable sulfur to lime-sulfur used at the rate of 1.6 gallons (Treatment 11) in Grove I was no better than the standard treatment (Treatment 9) and was more expensive.

The addition of hydrated lime and aluminum sulfate, each at the rate of 6 pounds, to lime-sulfur (Treatment 5 in Groves C and D) reduced the number of applications required but may have lowered the yield of fruit. The addition of these same supplements at the rate of 3 pounds of each (Treatment 6 in Groves A, B, C, and D) reduced the number of applications in only one grove, but in three groves the yield from the trees so treated was a little higher.

The addition of rosin-residue emulsion to lime-sulfur (Treatment 7 in Groves C and D) failed to give consistent results. The single test of potash fish-oil soap with lime-sulfur (Treatment 8 in Grove J) indicated a reduction both in number of applications required and in the total cost per tree. Single tests of sodium lauryl sulfate and of alkylated sulfonated diphenyl used as supplements to lime-sulfur (Treatments 12 and 13, respectively, in Grove I) failed to increase the efficiency of the lime-sulfur but increased the cost slightly.

Wettable sulfur, 325-mesh, used alone at the rate of 10 pounds per 100 gallons (Treatment 16 in Groves A, B, and H) was equal in efficiency to 2 gallons of lime-sulfur and the 4,000-mesh material used alone at the same rate (Treatment 25 in Groves F and H) was equal to or better than the lime-sulfur. The cost of the finer material was comparatively high when its efficiency merely equalled that of lime-sulfur. The same number of applications was required when either the 325-mesh or the 4,000-mesh wettable sulfur was used alone at that rate (Treatments 16 and 25, respectively, in Grove H). In Grove H three applications of the 4,000-mesh material at the rate of 10 pounds (Treatment 25) were required, while only two applications of one-half that amount were required in Treatment 26. The better performance of the weaker and considerably less expensive concentration is hard to explain, unless the trees selected for that treatment happened to be less subject to rust mite infestation throughout the season.

The addition of hydrated lime and aluminum sulfate, each at the rate of 6 pounds, to 10 pounds of 325-mesh wettable sulfur (Treatment 17 in Groves C and D) reduced the number of applications when compared with the standard Treatment 1, and gave protection from russeting superior to that afforded by Treatment 1, but appeared to lower the yield in Grove C. The addition of 3 pounds of each of these supplements to the same sulfur (Treatment 18) was superior to Treatment 1 in Groves A, B, C, D, E, and F, so far as the number of applications for protection was concerned. It prevented russeting and caused very little fruit burn, as compared with other treatments in the same groves. Trees receiving this treatment, however, produced less fruit than trees sprayed with Treatment 1 in all groves in which it was used, where figures were available for comparison. Three pounds each of these same supplements added to 5 pounds of 325-mesh wettable sulfur (Treatment 23) was better than the standard treatment in Grove E, but was no more efficient in Grove G. The substitution of sodium bicarbonate for hydrated lime (Treatment 24) gave equally good results in this same grove. The 4,000-mesh wettable sulfur at 5 pounds in combination with either hydrated lime and aluminum sulfate or sodium bicarbonate and aluminum sulfate (Treatments 27 and 28) was a more effective spray in Grove H than Treatment 1, as it required fewer applications, but more russeted fruit was recorded from Treatment 27 than from either Treatment 1 or Treatment 28.

In a single test, 10 pounds of 325-mesh wettable sulfur in combination with rosin-residue emulsion used at the rate of 6 pounds (Treatment 19 in Grove F) was more efficient than Treatment 1 and slightly less expensive. When the amount

of rosin-residue emulsion was reduced to 3 pounds (Treatment 20 in Groves C and D) it was no better than the standard treatment. In Grove C the fruit yield from this treatment was low, but in Grove D the yield was one of the highest. Protection from russeting was satisfactory, and fruit burn recorded was negligible, but the treatment was the most expensive for which cost records were available in those groves. A single test with 5 pounds of 4,000-mesh wettable sulfur combined with 1 pound of rosin-residue emulsion (Treatment 29 in Grove H) required fewer applications than Treatment 1 and was less expensive.

Wettable sulfur, 325-mesh, at the rate of 10 pounds in combination with 1½ pints of fish oil (Treatment 21) was used only in Grove F. Fewer applications were required than with Treatment 1, but the yield was less and there was considerably more fruit burn than that recorded from any other treatment in this grove. When the amount of the sulfur was reduced to 5 pounds and combined with the same amount of fish oil (Treatment 22 in Grove G) it was nearly as effective as the standard treatment, but was more expensive. Five pounds of 4,000-mesh wettable sulfur in combination with 1½ pints of fish oil (Treatment 30 in Grove H) was more efficient and cheaper than Treatment 1. When the amount of fish oil was reduced to 1 pint (Treatment 31 in Groves I and J) this combination was still more efficient and much less expensive than the standard spray in each grove.

The spray to which cottonseed oil was added at the rate of 1½ pints to 5 pounds of 4,000-mesh wettable sulfur (Treatment 32 in Grove H) proved to be more efficient and cheaper than the standard lime-sulfur treatment. With the cottonseed oil reduced to 1 pint, Treatment 33 was more effective than Treatments 9 and 1 in Groves I and J, respectively, and was just as efficient and was equal in cost to Treatment 31 containing the same amount of fish oil in place of cottonseed oil.

Tests in Grove H of 5 pounds of 4,000-mesh wettable sulfur with 1½ pints of linseed oil and corn oil, Treatments 34 and 35, respectively, were as effective as Treatments 30 and 32 containing equivalent amounts of fish or cottonseed oil, and were more effective than Treatment 1; also the costs compared fav-

Table 2. — Comparison of results obtained from the experimental application of various treatments for citrus rust mite control, tested in orange groves of Orange and St. Lucie, Counties, Fla., 1935-40, inclusive

Treatment	Applications Required	Average Yield Per Tree	Fruit Russeted	Fruit Burned	Amount Per Tree Per Application	Total Cost Per Tree
Symbol	Number	Pounds	Percent	Percent	Gallons1/	Dollars
		Grove A (Parson Brown), 1935				
1	4	418	3.4	31.0	—	—
2	3	434	2.4	22.4	—	—
6	3	489	6.2	19.6	—	—
16	4	368	0.0	17.8	—	—
18	3	367	1.2	11.6	—	—
Check	—	336	83.4	3.0	—	—
		Grove B (Valencia), 1935				
1	4	244	7.6	0.2	—	—
2	3	154	5.4	.6	—	—
6	4	192	9.2	.4	—	—
16	4	148	5.2	.2	—	—
18	3	175	7.0	.0	—	—
Check	—	144	86.6	.0	—	—
		Grove C. (Parson Brown), 1936				
1	3	442	3.3	2.1	6.5	0.25
2	2	404	.8	1.3	6.5	.21
5	2	394	1.0	2.6	—	—
6	3	461	13.0	2.1	—	—
7	2	360	2.1	.8	—	—
17	2	361	2.0	.6	—	—
18	2	348	.6	22.1	—	—
20	3	351	3.0	.3	6.5	.27
Check	—	347	43.3	.5	—	—
		Grove D (Valencia), 1936				
1	5	180	15.8	2.7	8.3	.53
2	4	150	1.5	.6	8.2	.53
5	4	126	6.3	.5	—	—
6	5	213	13.2	1.2	—	—
7	5	168	3.2	.2	7.5	.51
17	4	174	3.5	.0	—	—
18	4	132	5.4	.2	—	—
20	5	211	7.5	1.2	8.1	.58
Check	—	106	88.9	.0	—	—
		Grove E (Valencia), 1936				
1	4	—	4.4	0.0	8.7	0.45
1	3	—	4.4	.0	6.8	.33
3	3	—	2.4	.4	8.1	.35
14	3	—	3.1	.4	8.1	.36
15	3	—	3.8	.2	8.1	.32
18	3	—	1.1	.6	—	—
23	3	—	2.4	.0	—	—
38	3	—	4.2	1.0	8.1	.36
39	3	—	6.7	.0	8.1	.47
40	3	—	1.3	.8	8.1	.40
		Grove F (Valencia), 1937				
1	5	369	4.5	1.8	5.9	.38
2	4	355	6.1	3.0	6.7	.44
18	4	339	5.1	2.0	—	—
19	4	325	4.9	2.0	6.2	.37
21	4	291	9.5	13.0	—	—
25	4	330	4.3	1.6	5.8	.37
41	6	167	42.3	1.0	—	—
Check	—	227	96.1	.5	—	—
		Grove G (Valencia), 1937				
1	4	—	1.5	4.2	7.1	.36
2	4	—	2.5	2.5	7.0	.46
15	4	—	3.0	1.2	7.3	.38
22	4	—	9.5	5.2	7.6	.41
23	4	—	1.2	.2	—	—
24	4	—	3.2	.0	—	—
38	5	—	9.5	.0	6.6	.49
		Grove H (Valencia), 1938				
1	3	—	8.0	0.2	7.4	0.28
3	3	—	.7	.7	7.0	.31
4	2	—	4.0	.2	7.9	.25
16	3	—	—	—	7.2	.29
25	3	—	2.0	.0	7.6	.36
26	2	—	16.0	.0	7.6	.20

27	2	—	14.0	.0	—	—
28	2	—	2.0	.0	—	—
29	2	—	11.0	.0	8.8	.23
30	2	—	3.0	.0	7.2	.21
32	2	—	11.0	.7	9.0	.26
34	2	—	7.0	.5	7.8	.24
35	2	—	11.0	.0	8.2	.24
37	2	—	6.0	.0	6.9	.19
41	4	—	8.0	.0	1.0 lb	.10
42	4	—	14.0	.0	.5 lb.	.11
Check	—	—	73.0	.0	—	—
		Grove I (Valencia), 1939				
9	2	—	4.0	1.2	8.8	.22
10	1	—	7.0	1.2	9.3	.15
11	2	—	4.0	.5	9.1	.28
12	2	—	6.0	.3	9.2	.23
13	2	—	7.0	.5	9.7	.24
31	1	—	9.0	.8	8.8	.12
33	1	—	9.0	1.0	8.8	.12
41	1	—	14.0	.0	1.1 lb.	.03
42	2	—	7.0	.0	1.0 lb.	.10
Check	—	—	57.0	.0	—	—
		Grove J (Valencia), 1940				
1	3	—	—	—	10.0	.38
2	2	—	—	—	9.1	.30
4	2	—	—	—	8.9	.28
8	2	—	—	—	9.2	.25
31	2	—	—	—	8.9	.25
33	2	—	—	—	8.8	.25
36	3	—	—	—	9.2	.38
41	3	—	—	—	1.1 lb.	.08
42	3	—	—	—	1.0 lb.	.15

1/ Except in dust treatments, which are given in pounds.

orably with those of the other sulfur-and-oil mixtures.

The combination of potash fish-oil soap, 1 pound, and 4,000-mesh wettable sulfur, 5 pounds, (Treatment 36 in Grove J), was no more effective than the standard treatment and the cost was the same. The same amount and type of sulfur with 1 pound of soybean flour (Treatment 37 in Grove H) was among the most effective sprays in this grove and was the cheapest for a spray schedule.

Dry lime-sulfur alone at the rate of 5 pounds per 100 gallons of water (Treatment 38) was more effective and cheaper in Grove E than the standard treatment but was the least effective and the most expensive treatment used in Grove G. Dry lime-sulfur at the rate of 8 pounds plus 5 pounds of 325-mesh wettable sulfur (Treatment 39) and at the rate of 5 pounds plus the same wettable sulfur (Treatment 40) were also tried in Grove E. Treatments with these sprays were more efficient than those with the standard lime-sulfur, but were no better than dry-lime sulfur alone, although much more expensive.

Sulfur dust, 325 mesh, (Treatment 41), was used in Groves F, H, I, and J. In Grove F it required more applications than any other treatment and the fruit yield was even less than from the check. However, this light yield is attributed chiefly to the small size of the trees used for the treatment. Excessive fruit russeting was also recorded from this treatment in Grove F, but this was due to delay in making an application of the dust following a heavy rain rather than to the ineffectiveness of the material. In two of the three other groves where the material was used, as many or more applications were required than for other schedules, but this treatment was much cheaper than any other spray schedule.

A 2,000-mesh dusting sulfur (Treatment 42), was compared with the 325-mesh dust in Groves H, I, and J, and was as effective as the coarser material in Groves H and J, but an additional application was required in Grove I. In each grove the fine dust was more expensive than the coarse, although smaller quantities were used.

Conditions affecting results of treatments. — When weather conditions were favorable for spraying or dusting, all the treatments included in these tests were effective in controlling rust mites, but some materials adhered to the fruits and foliage longer than others, thereby reducing the number of applications per season necessary for protection. Variations in the infestation of rust mites in different groves during different years and differences in the time of fruit maturity were also responsible for variations in the number of applications required of the same material.

There is no doubt that rainfall, by removing sulfur from the trees, was an important factor in decreasing the length of the protective periods, but natural decreases of rust mite infestations take place during the summer, which is also a period of heaviest rains, and ordinarily the longest periods of protection, were recorded during intervals when the most rain fell. However, rainfall is an important factor when it occurs during or immediately following an application of sulfur dust. This was clearly demonstrated in Grove F with Treatment 41. Immediately after the second application of this treatment a heavy shower occurred. Infestation counts made 4 days after the rain showed that very little control had been obtained by the second dusting and, although a third application was made immediately, much russeting had taken place during the 4-day interval.

Effect of treatments on scale infestations.—It was found during the course of the work that trees receiving sprays containing large quantities of inert adhesive materials were being heavily infested with the Florida red scale (**Chrysomphalus aonidum (L.)**) and the purple scale (**Lepiodsaphes beckii** (Newm.)). Scale increases were so noticeable on some trees in Grove C in 1936 that a detailed study was made and it was found that the scale populations on trees receiving the various rust mite treatments were greater than on untreated trees. The increases on trees sprayed with materials containing small amounts of inert materials were not significantly greater, but the numbers of scales found on trees receiving Treatment 5 (2 gallons of lime-sulfur with 6 pounds each of hydrated lime and aluminum sulfate) and Treatment 17 (10 pounds of wettable sulfur plus 6 pounds each of the same supplements) were significantly greater than those on unsprayed trees. Although these sprays and others containing various amounts of hydrated lime or aluminum sulfate were used in other groves without causing the development of injurious scale infestations, they should not be used on citrus trees for rust mite control because of the possibility of favoring scale development. Additional information on the effects of spray residues on scale-insect populations has been published (3).

Summary and Conclusions

During the period 1935 to 1940, inclusive, 42 different spray and dust treatments were tested, each in one or more orange groves in Orange

(Continued on page 18)

Highlands County...

Mr. Louis H. Alsmeyer, County Agricultural Agent of Highlands County is one of the most capable agents in Florida and the work that he has done in Highlands County is evident on every hand. Due largely to the efforts of Mr. Alsmeyer his County has made remarkable progress in the citrus, cattle and vegetable growing industries.

Highlands County is one of the six leading citrus producing counties in Florida. The many hills and lakes give much of the county very desirable cold protection, and thus the large citrus plantings. This area is particularly famous for the fine grapefruit and Valencia oranges produced and as a general rule they bring top prices on the northern markets. During the past sixteen years the production has increased from 310,000 boxes to 1,240,000 boxes.

Highlands County ranks second in the production of sub-tropical fruits and is especially noted for it production of late fall and winter maturing varieties of avocados. Because of ideal soil and climatic conditions the trees grow to very large size and produce maximum crops year after year.

The discovery by the University and other research workers of the effect of rare minerals on the increased production of all agricultural commodities has been an important factor in the successful development of the citrus, avocado, cattle and vegetable growing industries. Through the use of these secondary elements, not only has the yield of all crops been greatly increased, but the quality standard has also been raised.

Over 70,000 acres of improved pastures have been planted in Highlands County during the past seven years, which is more than any other two counties in the state. Cattlemen in this important range cattle county realize that they must have better feed to produce better livestock.

The rich farm lands in the Istakpoga section is being rapidly developed into one of the most desirable centers for the production of winter vegetables. This past season found more than twice the acreage under cultivation than ever planted before. With the demand for the increased production of winter vegetable crops in Florida, it is safe to predict that the acreage will be increased again next season.

Highlands County is a progressive agricultural county.

Reports of Lyons Field Men . . .

HILLSBOROUGH & PINELLAS COUNTIES
C. S. (Charlie) Little

During the first part of May we were beginning to suffer for rain but about the time growers were planning to get their irrigation pumps going we were fortunate enough to get a shower. While we haven't had plenty of moisture we are not suffering and groves as a whole are in splendid condition. We have a good set of fruit with the exception of D u n c a n grapefruit and tangerines. There is a great deal of activity among the canners for grapefruit from this section and the prices that they are paying are satisfying. The Valencia season is just about to come to a close.

NORTH CENTRAL FLORIDA
V. E. (Val) Bourland

With the shortage of labor that exists in this territory the wits of all growers are being taxed to carry out their production program on schedule. We are busy with our summer application of fertilizer, trying to spray at the same time and couple this with other operations to be cared for and it is evident that with the labor shortage we are having difficulties. However, on the whole things are going well. As a general rule we have a nice crop of fruit set on the trees, we have been getting some rain which eliminates the expense of irrigation, and there is a general spirit of cooperation among growers, caretakers, fertilizer manufacturers, insecticide manufacturers.

POLK & HIGHLANDS COUNTIES
J. M. (Jim) Sample

At this writing, the middle of May, most of Polk and Highlands counties are in need of rain. There have been a few light showers but to date this area is about 4½ inches short of rain since January 1. The summer application of fertilizer is being applied at this time with nearly all growers anxious to follow the recommendations of a complete fertilizer program of major and minor plant food elements, and this coupled with a copper zinc spray. Growers who have followed this program are well pleased with results and report that they are consistently getting bigger crops of better quality. The Valencia crop is being cleared up. Our bloom is good with the exception of early gropefruit and tangerines.

SOUTHWEST FLORIDA
F. W. (Felton) Scott

The vegetable marketing season is rapidly coming to a close in this territory. While prices slumped somewhat from the high of the early season the levels maintained were more or less satisfactory depending on the crop and most growers have been able to show a profit on the season's operations. Our thoughts are already turning to the fall crop with cover crops being planted and general work being done to have a large acreage ready for the fall season.

WEST CENTRAL FLORIDA
E. A. (Mac) McCartney

Readers of this part of The Lyonizer have no doubt made up their minds that the writer is more or less of an optimist. Frankly, this is true, but at the present time we are even in higher spirits. Our growers are completing their most successful season in many years, and while OUR GROWERS have been the leaders in every season they were just proportionately more successful this year. This condition will continue to exist as we are now in the midst of the summer application of fertilizer and I am proud to advise that with very few exceptions we are delivering our SUPER X mixtures and this is certainly going to result in not only an increased production but also better quality.

Highlands County Agent LOUIS H. ALSMEYER

Is shown in the picture at the righth inspecting a fine field of gladiolus in the Istokpoga section. During the past year production of this crop was greatly reduced in favor of increased production of such

war crops as Irish potatoes, cabbage and beans.

The picture at the left shows a typical Highlands County lake and grove scene.

The picture at the right shows a field of sugar cane in Highlands county, just before being cut to feed beef cattle during the winter months.

EXPERIMENTS IN THE CONTROL OF CITRUS RUST MITE

(Continued from page 15)

and St. Lucie counties, Fla., for the control of citrus rust mite (**Phyllocoptes oleivorus** Ashm.) The efficiency of each treatment was judged by the number of applications necessary per season for protection against reinfestation of rust mites rather than on mortality of the mites.

In general, fewer applications of sulfur sprays than of sulfur dusts were required for control of the citrus rust mite. A spray composed of 2 gallons of lime-sulfur plus 10 pounds of 325-mesh wettable sulfur per 100 gallons was one of the most efficient of the treatments tested. When either the lime-sulfur content or the wettable sulfur content, or both, was reduced in this mixture to half the quantity, no increase in the number of applications was required to control rust mites. The 325- and 4,000 mesh wettable sulfurs, when used alone at the rate of 10 pounds per 100 gallons, each required the same number of applications, and both materials were as effective as 2 gallons of lime-sulfur used alone. Combinations of dry lime-sulfur and wettable sulfur were no better than dry lime-sulfur alone. The most effective of the supplements used with sulfur sprays were the oils. When these were added to either 325- or 4,000- mesh wettable sulfur sprays the required number of applications compared favorably with that of sprays in which the sulfur content was greater. One pint of the various oils in combination with 5 pounds of wettable sulfur was as effective at 1½ pints of oil with either 5 or 10 pounds of wettable sulfur.

The addition of hydrated lime and aluminum sulfate to either lime-sulfur or wettable sulfur increased the efficiency of both sulfurs in controlling the rust mite. However, in one grove heavy infestations of the purple scale and the Florida red scale developed on trees that had received sulfur sprays containing large quantities of hydrated lime and aluminum sulfate. For this reason, mixtures containing these materials should not be applied to citrus trees for rust mite control.

There was more variation in russeting between the same treatments applied in different groves than between different treatments used in the same groves.

In general, materials containing lime-sulfur appeared to be slightly more injurious than those in which the sulfur content was made up of wettable sulfur. This was especially noticeable in one grove in which all treatments caused an unusual amount of sulfur burn to oranges of the Parson Brown variety. The same treatments were not injurious to either Parson Brown or Valencia oranges in other groves. Wettable sulfur in combination with fish oil caused considerably more injury to the fruit than other treatments used in one Valencia grove. Much less injury occurred in other groves when the oil or sulfur content of the mixture was reduced.

Controlling rust mites increases fruit production. There was a great variation in the average yield per tree in different groves receiving the same treatment, but with only one exception the treated trees produced more fruit than the untreated trees in their particular grove, regardless of the sulfur treatment applied.

Costs of satisfactory sulfur treatments for rust mite control were calculated from data collected over a period of 5 years in eight orange groves. In general, control of rust mites by dusting was less expensive than control by spraying. On Valencia oranges the cost of dust programs ranged from 3 to 15 cents per tree, as compared with costs of 12 to 58 cents per tree for various spray programs. The 2,000-mesh sulfur-dust treatments were more expensive than the 325-mesh dust treatments. Although the addition of wettable sulfur to lime-sulfur reduced the number of applications required, in one grove a schedule employing lime-sulfur alone was cheaper, even though an extra application was made. A spray program of lime-sulfur and potash fish-oil soap was cheaper than one in which wettable sulfur was substituted for the lime-sulfur. Wettable sulfurs combined with oils were less expensive than mixtures of lime-sulfur and wettable sulfurs. Sprays containing dry lime-sulfur were more costly than most of the other comparable spray mixtures.

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